

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended) A mobile IP network system comprising:
a plurality of radio access networks each connected to mobile stations via radio links; and
an IP network to which a home agent node and a plurality of packet nodes each for transferring IP packets destined for one of mobile stations and received from the home agent node to one of said radio access networks are connected,
wherein each of the radio access networks has at least one base station controller and at least one radio base station which is connected to the base station controller to perform radio communications with a plurality of mobile stations, and
wherein each of the base station controllers ~~in the radio access network~~ is connected to the plurality of packet nodes through a network, receives an identifier of a previous packet node from another base station controller when one of the mobile stations moved into a control area of the base station controller from a control area of the another base station controller belonging to another radio access network, and selects either the previous packet node which is communicating IP packets for the moved mobile station with said home agent node or a preliminarily designated specific packet node in accordance with a communication state of the mobile station, thereby to selectively carry out IP packet communication for the moved mobile station between the base station controller and the previous packet node using a

previous identifier of a logical connection having been established between the previous packet node and the mobile station or IP packet communication between the base station controller and the specific packet node using an identifier of a new logical connection established between the specific packet node and the moved mobile station, after performing a registration procedure between the moved mobile station and said home agent node, depending on the communication state of the mobile station.

2. (currently amended) A mobile IP network system according to claim 1, wherein each of said base station controllers selects, with respect to the mobile station moved from the control area of said another ~~radio access network~~base station controller to the control area of the base station controller, said previous packet node when the moved mobile station is in a state of communicating IP packets with the previous packet node and requests the previous packet node to communicate IP packets for the moved mobile station with the base station controller.

3. (currently amended) A mobile IP network system according to claim 2, wherein each of said base station controllers has means for monitoring communication packets of the mobile station which has moved from the control area of said another base station controller, thereby to close the communication between the base station controller and the previous packet node, and to establish a ~~the~~ new logical connection between the moved mobile station and said specific packet node

via the base station controller, upon detecting that data transmission and reception of the moved mobile station is ceased.

4. (currently amended)A mobile IP network system comprising:

a plurality of radio access networks each connected to mobile stations via radio links; and

an IP network to which a plurality of packet nodes for transferring IP packets are connected,

wherein each of the radio access networks has at least one base station controller and at least one radio base station which is connected to base station controller to perform radio communications with a plurality of mobile stations, and

wherein each of the base station controllers_i in the radio access network is connected to the plurality of packet nodes through a network, receives an identifier of a previous packet node from another base station control when one of the mobile stations moved into a control area of the base station controller ~~form~~from a control area of the another base station controller, and selects either the previous packet node of a preliminarily designated specific packet node in accordance with a communication state of the moved mobile station, thereby to selectively carry out IP packet communication for the moved mobile station_i using a previous identifier of a logical connection having been established between the previous packet node and the moved mobile station or an identifier of a new logical connection established between the specific packet node and the moved mobile station depending on the communication state of the moved mobile station,

wherein each of said base station controllers selects, with respect to the moved mobile station moved from the control area of said another radio access network to the control area of the base station controller, said previous packet node when the moved mobile station is in a state of communicating IP packets with the previous packet node and the requests the previous packet node to communicate IP packets for the mobile station with the base station controller,

wherein each of said base station controllers has means for monitoring communication packets of the moved mobile station which has moved from the control area of said another base station controller, thereby to close the communication between the base station controller and the previous packet node, and to establish a new logical connection between the moved mobile station and said specific packet node via the base station controller, upon detecting that the data transmission and reception of the moved mobile station is ceased, and

wherein said specific packet node has means for notifying to a home agent node of the moved mobile station which is connected to the IP network that the mobile station is in a control area of the specific packet node after setting of the new logical connection for the moved mobile station so that the home agent node having received the notification transfers IP packets, which are destined for the moved mobile station and received thereafter from the IP network, to the specific packet node.

5. (currently amended) A mobile IP network system according to claim 1, wherein each of said ~~plurality of~~ packet nodes has a foreign agent function for

transferring an IP packet received from a home agent node connected to the IP network to any of the base station controllers.

6. (currently amended) A method of switching a connection for communication between a mobile station connected to any of a plurality of radio access networks via a radio link and a plurality of packet nodes connected to an IP network, comprising:

a step of establishing a first logical connection to be used for IP packet communication between a mobile station connected to a first radio access network and a first packet node which is preliminarily related with the first radio access network;

a step of transferring, by said first packet node, IP packets for the mobile station which are received from a home agent node of the mobile station, to the first radio access network using an identifier of the first logical connection;

a step of connecting the mobile station to a second radio access network adjacent to the first radio access network when the mobile station moves into an area of the second radio access network; and

a step of requesting from the second radio access network to the first packet node to communicate IP packets for the mobile station with the second radio access network while maintaining the first logical connection,

wherein IP packets are communicated between the mobile station and the first packet node using ~~an~~ the identifier of the first logical connection via the second radio access network without establishing a second logical connection between the

~~mobile station and a second packet node which is preliminarily related with the~~
~~second radio access network~~performing a registration procedure between the mobile
station and said home agent node until communication of IP packets for the mobile
station is ceased.

7. (currently amended)A connection switching method according to claim 6, further comprising:

a step of closing, upon detecting that data transmission and reception ceased, the first logical connection and establishing a new logical connection to be used for IP packet communication between the mobile station and a second packet node via the second radio access network, said second packet node being preliminarily related with the second radio access network.

8. (currently amended)A base station controller for a radio access network for communicating IP packets with one of packet nodes each of which is connected to an IP network and has a foreign agent function for transferring IP packets received from a home agent node to mobile stations, comprising:

a first communication interface for connection the base station controller to a radio base station, a second communication interface for communication with a plurality of packet nodes connected to the IP network, and a control unit connected to the first and second communication interfaces,

wherein the control unit selectively requests one of the packet nodes selected in accordance with a communication state of a mobile station ~~connected to~~removed

into a control area of the radio-base station via a radio channel~~controller~~ to establish a new logical connection to be used for IP packet communication between the mobile station and the packet node or to transfer IP packets for the mobile station to the base station controller using a previous identifier of a logical connection having been established ~~between~~used when the mobile station and the packet node ~~was~~connected to another radio access network, via the second interface.

9. (currently amended)A base station controller according to claim 8, wherein said control unit has means for selecting, when a ~~the~~ mobile station has moved into a ~~the~~ control area of the base station controller from said another radio access network, a first packet node which ~~has been~~is communicating with the mobile station in the another radio access network, to request the first packet node to transfer IP packets for the mobile station to the base station controller using said previous identifier of the logical connection having been establishedused in the another radio access network.

10. (currently amended)A base station controller according to claim 8, wherein said control unit has means for notifying a base station controller in adjacent one of ~~said the other~~ radio access networks of identification information of a previous packet node which has been communicating with the mobile station when the mobile station moved out from the control area of the base station controller to a control area of the adjacent radio access network.

11. (currently amended)A base station controller according to claim 9, wherein said control unit comprises:

means for monitoring communication packets for the mobile station which is communicating with said first packet node; and

means for switching a first logical connection having been established between the mobile station and the first packet node to a new logical connection which is established between the mobile station and a second packet node preliminarily related to the base station controller when it is detected by the monitoring means that the transmission of communication packets for the mobile station is stopped.

12. (currently amended)A base station controller for a radio access network for communicating IP packets with one of packet nodes each of which is connected to an IP network and has a foreign agent function, comprising:

a first communication interface for connection the base station controller to a radio base station, a second communication interface for communication with a plurality of packet nodes connected to the IP network, and a control unit connected to the first and second communication interfaces,

wherein the control unit selectively requests one of the packet nodes selected in accordance with a communication state of a mobile station connected to the radio base station via a radio channel to establish a new logical connection to be used for IP packet communication between the mobile station and the packet node or to transfer IP packets for the mobile station to the base station controller using a

previous identifier of a logical connection having been established between the a mobile station and the packet node, via the second interface,

wherein said control unit comprises:

means for selecting, when a mobile station has moved into a control area of the base station controller from another radio access network, a first packet node which has been communicating with the moved mobile station in the another radio access network, to request the first packet node to transfer IP packets for the moved mobile station to the base station controller using said previous identifier of the logical connection having been established,

means for monitoring communication packets for the moved mobile station which is communicating with said first packet node, and

means for switching a first logical connection having been established between the moved mobile station and the first packet node to a logical connection which is established between the moved mobile station and a second packet node preliminarily related to the base station controller when it is detected by the monitoring means that the transmission of communication packets for the moved mobile station is stopped, and

wherein said second communication interface is connected to a communication network for connecting the plurality of packet nodes, and said switching means closes the first logical connection by requesting said first packet node to communicate IP packets for ~~said~~said the moved mobile station with the base station controller and establishes said second logical connection by requesting said second packet node to ~~communication-~~communicate IP packets for ~~said-the~~ moved

mobile station with the base station controller, ~~second packet node~~, when said monitoring means detects that the ~~stop of transmission~~ of communication packets has stopped.